

WHITE (With Dr. White's compliments)

SOME OF THE CAUSES OF  
INFANTILE ECZEMA,

AND THE

IMPORTANCE OF MECHANICAL RESTRAINT  
IN ITS TREATMENT.

BY  
JAMES C. WHITE, M.D.,  
PROFESSOR OF DERMATOLOGY IN HARVARD UNIVERSITY.



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## SOME OF THE CAUSES OF INFANTILE ECZEMA, AND THE IMPORTANCE OF MECHANICAL RESTRAINT IN ITS TREATMENT.<sup>1</sup>

BY JAMES C. WHITE, M. D.,  
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THERE is no affection of the skin so frequent in infancy, nor any in the whole range of children's diseases more difficult to manage successfully than eczema. That tissues so delicate and complex as the integument of the new-born babe should find the conditions of extra-uterine existence more varied and exciting than the equable protection afforded by its long amniotic bath is self-evident, the only wonder being that it withstands so well the rude abuses of its early management. Let us briefly consider what these are: First, from its prolonged, placid, subaqueous life it emerges into sudden contact with the more stimulating properties of an entirely different element, the atmospheric ether. For the first time its capillaries dilate to their fullest extent under the new conditions of respiration, an independent and intensified circulation, and spasmodic vocalization. So, too, its glandular systems are called upon to adapt themselves to the strange external surroundings; the sebaceous follicles to modify the character of their secretion, the sweat glands to perform their functions probably for the first time. Then its abrupt acquaintance with the foreign materials of the outer world. Anointed at once with fats, too often a rancid vegetable oil; then rubbed with a

<sup>1</sup> Read before the American Medical Association, May 4, 1881, and before the Boston Society for Medical Improvement, October 10, 1881.

chemical compound, more frequently than otherwise composed of impure constituents, and so imperfectly combined that an excess of alkali is at liberty to exercise its caustic action upon the susceptible skin ; then plunged into water of all varying temperature, and briskly rubbed ; and finally received upon a rough blanket and dried by friction, it may be, with a coarse towel. Such is often the first treatment the skin receives. Later the dressing : around its abdomen is bound tightly a broad flannel band, between its legs are stuffed thick folds of napkin, and about its lower extremities again the rough contact with the woolen petticoat, all ingeniously adapted to irritate the skin by overheating, pressure, and rude friction.

Is it at all unreasonable that in this its first hour's experience of the new life the skin should find cause to express resentment, or should fail to adapt itself immediately to such strange surroundings, and present within the first day or two a fugitive congestion of greater or less extent, a mild follicular inflammation, or other abnormal phenomena, which may readily develop into a more serious and permanent disturbance ? But to these are soon added other exciting conditions arising from mistaken opinions as to the care of the baby's skin, or from neglect of its person. The discharges are too often allowed to remain too long unremoved. That irritating faecal matter and great folds of napkin saturated with urine left by the hour in contact with the tenderest parts of the skin should produce the condition called intertrigo is what is to be expected. Such neglect is a very frequent exciting cause of eczema among the poorer classes, who cannot give the requisite attention in this respect to their babies. So, too, the frequent regurgitation of milk curdled by the gastric acid, and allowed to saturate the clothing around the neck throughout the day or night, gives rise to a similar inflammatory condition between the heavy folds of skin in this position in fat infants. Imperfect removal of the thick coating of smegma at the

first washing, or of the superabundant secretion which sometimes continues for a few days after birth, from between the folds of the skin, is the cause sometimes, also, of the same inflammation in the groins, navel, and around the neck.

Mismanagement of this secretion in another position forms one of the most frequent causes of infantile eczema. It is not an easy matter to remove from the scalp this prenatal cap of cheesy material without first thoroughly mixing it with other fat, the hair serving the purpose of fixing it all the more firmly to the skin. Very often, therefore, a remnant of it is left by the nurse, especially over the open fontanelle, which is added to by subsequent accumulation, as a timidity is generally felt in washing this apparently unprotected opening to the brain, while not infrequently the removal of this substance from the part is regarded with a superstitious feeling by the ignorant. Thus the sebaceous matter goes on accumulating until a thick coating is formed, sooner or later covering the whole top of the head, which retains the dust and dirt coming in contact with it, and assumes in time a brown or black color. It also retains the heat and moisture beneath it, which favor the decomposition of the newly-formed sebum, and thus produces a condition of active irritation. Not infrequently, too, attempts are made to remove this cap by violent means, as with the nails or a fine-toothed comb, which add greatly to the chances of dermatitis. After a time the scaly character of the covering is found to be undergoing a change into a crust. It cracks here and there, and allows the scalp to be seen for the first time, red and moist, and oozing through such openings a free escape of serum overflows the original sebaceous coating, and, coagulating, conceals it. The underlying redness extends beyond the crust to the bordering portions of healthy skin, and slowly or rapidly the case progresses to an acute eczema of the scalp, the milk crust and scald head of household nomenclature. Such is the history of devel-

opment in a vast number of cases of the disease in this locality, from which seat it may spread to a more general distribution.

To these external agencies must be added the influence of extreme temperature as an important factor in the development of eczema in infancy. The baby is generally so well protected against the action of excessive cold that with the exception of a mild degree of "chapping," it rarely gives rise to any disturbance in the skin; it is the other extreme, excessive heat, which it cannot escape, which produces so much mischief in this direction. Under its influence the sweat glands are often stimulated into such hyperactivity that the cutaneous tissues immediately surrounding them become congested, presenting a punctiform redness, or the hyperæmia may become more generally diffused. This, the mildest grade of "heat rash," may disappear at this stage with proper care on the subsidence of the exciting cause. If, however, the infant be improperly clothed at such seasons, so that the excessive action of the glands is promoted, this congestion rapidly develops into a papular eczema, which may continue indefinitely. I have seen a hyperidrosis, induced by over-covering during a single nap in summer, pass into an acute general eczema of several weeks' duration. To such imprudent management all children are exposed. It is chiefly, however, among the poorer classes that the evil results of over-heating and neglect of the skin in combination are found. Shut up by night in the stifling atmosphere of the tenement lodging, the skin has no opportunity to cool down after the baking heat of the day; the clothes, saturated with the irritating products of perspiration, act as continual warm fomentations upon the skin, which is rarely washed; these are the conditions which, kept up for weeks during the sweltering temperature of July and August, in our large cities, give rise to very characteristic changes in the cutaneous tissues of all grades of dermatitis. First, the punctiform congestion, perifollicular in seat; then

the diffused erythema, both of possibly brief duration; then true eczematous inflammation, in its macular, papular, and vesicular forms, passing into the more advanced stages of oozing, crusting, and pustulation; later, furunculoid dermatitis, affecting large surfaces of the body, especially the head; and finally deeper-seated abscess formation, affecting the subcutaneous structures. Such cases of eczema in the miserable infancy of our crowded city populations during the prolonged "heated terms" form a large proportion of the cases which present themselves for treatment at children's dispensaries and the out-patient departments for skin diseases at such seasons.

Such are the more common causes of eczema in the early days of infancy operating upon the excessively tender skin from without, some of which continue to be actively operative throughout babyhood. These form, however, but a small proportion of all the cases of the disease which occur at this period of life, although by far the greater part of those concerning the ætiology of which we have any positive knowledge. During the past twelve years I have treated at the out-patient department for skin diseases of the Massachusetts General Hospital 5000 cases of eczema, of which 1890 occurred in children of ten years of age and under, as by accompanying table:—

Within the first year of life	569 cases.
Between 1 and 2 years of age	286 cases.
Between 2 and 3 years of age	280 cases.
Between 3 and 4 years of age	198 cases.
Between 4 and 5 years of age	144 cases.
Between 5 and 6 years of age	118 cases.
Between 6 and 7 years of age	93 cases.
Between 7 and 8 years of age	76 cases.
Between 8 and 9 years of age	66 cases.
Between 9 and 10 years of age	60 cases.
Total	1890

It will be seen how large a proportion of the cases occurred in the earliest years of infancy: 31 per cent.

within the first year, 69 per cent. within the first three years.

The ratio of cases in children below the age of ten to the whole number of cases of the disease is 37.8 per cent.

Taking out the operation of the causes directly acting upon the skin from without, above mentioned, and a few other extraneous agencies, the parasitic chiefly, I do not hesitate to say that I know nothing whatever of the causes of the disease in the remainder. So far as my experience goes eczema, with the above exceptions, affects all classes of society alike; it occurs at all seasons of the year; it comes in children of all degrees of health, in the perfectly sound as frequently as in the feeble; it has no necessary connection with any other disease of childhood, even of coincidence, except fortuitous; it comes during dentition only because dentition is synchronous with infancy, although it may sometimes be temporarily aggravated by its active disturbing influences; it shows itself in an equal proportion among bottle babies and those reared by the breast, and is as independent of the nature of diet in the later years of childhood; and if there be other assigned causes for its production, of which in fact there is no end, I may here say that my observation gives me no justification for believing any of them. If a child have an inflammatory process affecting the internal skin anywhere, or the tissues of the lungs, kidneys, liver, brain, or any other structure of its system, it is not considered necessary either for the physician in attendance or the writer on such disease to account for its being, nor to offer, as a satisfactory cause of its existence, a supposed sympathy with or dependence upon the state of the blood, or the condition of some other organ or function, or to invent a hundred other imaginary aetiological relations which cannot be refuted because they rest upon no logical data. We know no more of the aetiology of infantile eczema to-day than of that of the majority of other affections of infancy. Let us then use the same honest and reasonable language in discussing it.

In infancy the disease almost always presents itself primarily in the acute forms *E. erythematosum*, *papulosum*, which under the constant rubbing and scratching to which the skin is subject, readily become excoriated and develop into *E. madidans*, and less frequently *E. vesiculosum* or *pustulosum*. In process of involution these naturally pass through the crusted and scaly stages of the affection also. A certain degree of infiltration accompanies the most acute forms after a short duration, which in obstinate cases amounts to a considerable degree of thickening of the corium. Upon the face and scalp it almost always tends to assume its most inflammatory type, serum oozing copiously from the denuded skin and drying, when left long enough unmolested, into thick yellow crusts frequently mixed with blood from the deep excoriations made by the nails, or with pus and sebum upon the scalp. Upon the rest of the body the papular variety is the most common.

All these forms are accompanied by an intense itching which demands relief by scratching, but which only adds to the sufferings of the little patient by aggravating the harassed state of the cutaneous sensitive nerves. This desire, almost always incessant, becomes in many cases a real paroxysmal frenzy, the hands and feet being used simultaneously in scratching, while the head is violently and rapidly rubbed from side to side against the pillow, the clothing, its own body, the attendant, or any opposing surface which offers. This is repeated at shorter or longer intervals throughout the day and night. Under such persistent violence the inflammation of the affected portions of the skin is of course intensified, the hyperæmia is perpetually sustained, the protecting crusts and newly-formed cuticle are constantly torn away, and the tender cells of the rete and the papillary layer are plowed into unmercifully. After such furious attacks the whole head, or large areas of the general surface, looked as if just flayed, intensely red, dripping with serum, and presenting numerous points or long furrows of free haemorrhage. But the effects of this

violence are not confined to the parts principally affected : the neighboring portions of skin are unavoidably abused also, with the necessary result of a development of the disease in such directions, and its more or less rapid spread over large extents of surface. It is in this way that a local eczema, confined at first, as in the great majority of cases it is, to the scalp or other part of the head, becomes general, the disease assuming its most advanced or active type in the most robust children, for it is these who rub and scratch most vigorously and endure the longest. Indeed, it is a marvel how long and well an infant a few months old will bear such strains upon its delicate nervous system, as these paroxysms of frenzy must be. Adults describe those of much milder form attendant upon various kinds of cutaneous pruritus as resembling in their immediate exhaustive after-effects those following the sexual orgasm. The want of continuous sleep, too, should have its ill results, but strange to say, such a child may lay waste the strength and health of a household by the care it demands through months and months of nights and days, and remain at last its only healthy representative in all respects save its skin, retaining its nutrition, plumpness, vigor throughout. The health of those in charge of it becomes, in fact, eventually the chief object in view in the cure of the baby.

This is in no way an exaggerated picture of the disease ; every physician recognizes the type and his inability in many cases to deal with it. Is it strange that such cases should be obstinate under ordinary treatment, and resist change after change in method, improving to a slight extent for a few days, it may be, to relapse as often ? Is it surprising that such patients should be transferred from one physician to another and another until the fortunate last one of all is reached ? It is strange, however, that there should be found many a physician advising parents that it is either useless to do anything for the cure of the disease or dangerous to attempt it. The writer has seen

numerous cases of severest eczema in infants allowed to continue for months and months without local treatment under the advice of fashionable homœopathic practitioners to the effect, in one instance, that an application even of oxide-of-zinc ointment would be sure to bring on convulsions and death. Such let-alone treatment is at least possibly consistent with some sectarian tenet and therefore pardonable ; but what can be said in the more numerous cases where the so-called regular family physician pursues the same inhuman course and permits a child to suffer the torments of self-torture, and the health and happiness of a family to be destroyed through long periods of distressful days and endless nights in at least apparent subservience to the groundless popular fear that it is dangerous to cure or "drive in" an eruption ? In too many such cases the plea of ignorance cannot certainly be offered in his justification. Every physician may, indeed, often have to say that he has tried this and that remedy advised by authority without result, and that finally he has let alone what apparently could not be controlled by treatment ; such want of success forms too nearly the rule rather than the exception in infantile eczema.

It is, therefore, to present the claim of a method which offers a surer success in the treatment of so obstinate an affection that I venture to ask your attention. The method to be proposed has no element of novelty in it, introduces no new or specific drug to the overburdened *materia medica* of the disease ; it is only a system of proper restraint which shall give the therapeutics of eczema in infants the same chances of success as in other periods of life. For so long as any degree of eczematous inflammation of the skin exists this subjective symptom, itching, is necessarily present, and is as much a part of the disease as the hyperæmia or any of its manifold forms of surface lesions. So long as there is any itching, so long will the child rub and scratch, and so long will all direct treatment in the form of washes, powders, ointments and the like, or

any form of internal medication, be of little or no avail, for a minute of unguarded scratching will more than undo all that has been gained by their use in twenty-four hours. They must be allowed to do their proper work, and this can only be made possible by making this counter-agent impotent. This cannot be accomplished by any number of nurses or attendants of the most conscientious vigilance, for two persons would have to hold the child simultaneously during every moment, day and night, to insure safety, and this is wholly impracticable. It can only be effected by a properly constructed harness or system of clothing adapted to the extent and position of the disease in every case.

Let us consider, first, its application to the most common condition, acute eczema of the head. A skull cap is to be made of firm old cotton or linen cloth so as to closely fit the calvarium; a mask of the same material is then shaped to the face, with exactly placed apertures for the eyes, nose, and mouth, and with slits for the ears. It is to be gathered in somewhat beneath the chin, and made long enough to lap some two inches at the back of the head. This in mild cases will prove to be a sufficient protection against the efforts of the infant to get at the irritated skin with its hands, and a shield against the damage inflicted by rubbing the inflamed parts against every opposing surface which offers. It is sometimes sufficient that such a mask and cap should be worn only while the child is sleeping, the only time when it is generally left unwatched, but such partial use is permissible only in the mildest grades of the disease. But the protection from without afforded by the mask is only one of its important duties: it may also be made to take a valuable part in the direct treatment of the disease. Of course its use will never interfere with the application of any other class of remedies to the skin, but it may be smeared with ointment, and, adjusted tightly, form an impermeable coating to the inflamed skin. It may

be worn in this way for twenty-four hours without change, or removed at shorter intervals for the application of such other remedies as the case demands. The nose and ears should protrude through their appropriate openings to assist in retaining the mask in position, which should be tightly stitched or pinned with fine safety-pins at the back of the head. But generally additional means must be employed against mischief, as the hands of a strong infant are capable of doing injury both to the mask and the skin beneath during the paroxysms of itching, or of developing the disease upon the neck and other parts. It is generally best, therefore, in all but the mildest cases of the affection, even when confined to the head, to use a sort of strait-jacket in addition to the mask. A hole is to be cut in the closed end of a small pillow-case large enough to allow the child's head to pass through. This is to be drawn down over the body and arms. The back and front surfaces are then to be stitched together between the arms and body by a long darning-needle from the axillæ down to the ends of the fingers, thus confining the arms in closed sleeves to the sides. The same result may perhaps be more readily accomplished by the use of several safety-pins in place of the stitches, by which the jacket may be more readily taken off when necessary. The pillow-case is then to be fastened together by the pins between the legs from front to back, so that the arms cannot possibly be brought up to the head. This lower fastening can of course be removed without trouble as often as it is necessary to change the napkin. We have thus rendered the hands completely harmless. The mask and jacket are of course resisted by the little patient at first, but in a day or two are worn, when adjusted, without a struggle. The chief opposition to their use come always from the mother, to whose pride in her child's appearance they are often a sore affront. The jacket should be worn day and night, and while removed for the application of other dressings, or dur-

ing the bath, the hands are not for a moment to be left unheld by an additional attendant. It is astonishing what results are often accomplished within twenty-four or forty-eight hours by the mask and jacket. The skin, having for the first time, it may be for months, a chance given it of expressing its desire or capability of improvement, loses rapidly its inflamed condition, and its nerve filaments, free from the constant insults they had received, quiet down and in turn give the patient the rest so long wanting. The demoralization of the household disappears with the same rapidity, and in a week, it may be, the disease is seen to be well on the road to recovery. Such is by no means an uncommon result. But not until the skin is completely restored to its normal condition, or at least until all signs of the inflammatory state and of pruritus have disappeared, are these mechanical means of restraint to be relaxed.

When, however, the disease is more extensively distributed, covering the arms and legs, or the whole surface as well as the head, the necessity of their employment is the more imperative, as the suffering is greatly intensified and the temptation to injure the skin increased in proportion to the greater area affected. In such cases it often becomes necessary to confine the feet and legs as well as the upper extremities, to prevent their constant friction against each other. The same method of pinning through the pillow-case from front to back should be employed, following the inner line of the legs from the crotch to the feet, while they are kept some distance apart. If the outer edge of such trowsers be then fastened to the bed or cushion on which the child is seated, the legs can neither be drawn up or approximated to any dangerous contiguity. To any who think that such restraint, preventing as it does almost wholly the natural movements of the limbs, might be not only uncomfortable but injurious, the custom of many nations of tightly swathing their infants through the early periods of life without harm may be cited.

But with these preventive measures can we combine means also of hastening more directly the cure of the affection? It is not my intention to discuss here that important and difficult subject, the general therapeutics of infantile eczema; I will state how far only the former may be made to do additional service in the latter direction. As I have stated that the cap and mask may be smeared with ointments, so may the arms and legs be covered with bandages anointed with the same before being placed in confinement. A favorite plan of managing this part of the treatment with myself is as follows: To the head and face or other parts affected there may be applied, morning and evening such washes as are thought advisable. The cap and mask, previously well smeared with some ointment, are then carefully adjusted, pressed firmly into the skin, and tightly fastened. Other parts are then similarly treated, the ointment being applied to the body and limbs if required, on thin old cotton or linen cloths. The pillow-case is then put on carefully and pinned into form. These dressings are left unchanged twelve or twenty-four hours, according to circumstances, and are then removed for a short time for the application of other needful remedies. The same cap and mask and other swathes are then to be respread and applied as before. In this way one set of cloths may be made to serve for three or four days, according to the amount of discharge from the skin. If they be changed daily the ointment is mainly wasted in saturating the texture of the cloth, leaving little free to act upon the skin. Of course in some cases ointments are not advisable, when the mask should be worn dry.

Such are the simple mechanical means, to be found in every household, which I regard as all-important in the treatment of one of the most distressing and rebellious diseases of infancy.





